

Overview of Results from the SIR-C/X-SAR Mission

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ABSTRACT

The US Space Shuttle is a useful platform from which to evaluate remote sensing instrumentation. The latest version of the Spaceborne Imaging Radar (SIR) program, SIR-C, consisting of both L- and C- band polarimetric SARs, has been combined with X-SAR, an X-band VV-polarized SAR and flown aboard Shuttle in April and August 1994. SIR-C/X-SAR produces multi-temporal data at multiple look angles, multiple wavelengths, and (at two wavelengths) across the full spectrum of polarizations.

SAR provides its own illumination and images through clouds, allowing it to explore regions not accessible using other instrumentation. SAR also can enhance topography and can provide additional information about subsurface or deep-target geometry in some targets. In the second SIR-C/X-SAR flight, the exciting prospect of interferometrically-derived topographic mapping will also be investigated.

Central themes of the science investigations are the global carbon cycle, the hydrologic cycle, paleoclimate and geologic processes, ocean circulation and air-sea interactions, and advanced technology. In each case, the goal is to feed the development of invertible models which produce maps of bio- or geophysical parameters. In this paper we will report the sensor and mission performance during both flights and describe early results of the scientific investigations.